

REMARKS

Claims 21 to 40 are in this application and are presented for reconsideration. By this Amendment, Applicant has canceled claims 1 to 20 and added new claims 21 to 40 substantially encompassing the combination of features of the originally presented claims 1 to 20 and highlighting the combination of features which define over the prior art references.

On March 15, 2005, Applicant presented claims 1 to 6 and 8 to 20, of which, the amended independent claims 1 and 11 included features from the allowable claims 7 and 19. Applicant firmly believed that all issues had been resolved by that Amendment and a Notice of Allowance would be issued. However, a new Office Action was issued rejecting the amended claims containing the allowable combination of features. In response, Applicant has added new claims 21 to 40 which are based on the canceled claims 1 to 20 and also based on the specification. Specifically, the disclosure of the new claim 21 is provided in the preamble of the original claim 1, original claims 2 and 7, and further on page 6, line 1, and page 13, line 7 of the specification. The disclosure of the new claim 30 is given by the preamble of the original claim 11, original claims 12 and 19, and the parts of the specification mentioned above. The new claims 22 and 31 contain the features of the original claims 1 and 11 and are now dependent from the new claims 21 and 30. The subject matter of the new claim 39 is disclosed on page 6, last paragraph of the specification and claim 40 is discussed on page 5, last paragraph. The new claims do not add any new matter to the application.

By this amendment, applicant has canceled the original claims and added several new claims to overcome the Examiner's rejections and respectfully makes assertions for

overcoming the rejections of the outstanding office action dated May 3, 2005 in the following paragraphs.

Claim Rejections –35 USC §102.

Claims 1, 8 to 11 have been rejected under 35 USC §102 (b) as being anticipated by the U.S. Pat. No. 5081593 to Pollack (the “Pollack ‘593” reference, hereinafter).

The Pollack ‘593 reference discloses a technique for preventing a stalled linear motor device from damage by including a monitoring accelerometer servos which generates signals representative of the difference between a command acceleration signal controlling the linear motor and the actual acceleration experienced by the linear motor device which signal represents the acceleration error and the direction of the error. The different signal is compared against programmed limits to develop a break – loose signal when the program to limit (positive or negative) is exceeded. The break – loose signal is monitored as to the duration, which duration is preprogrammed according to the dynamics of the system specifications presently in use. In the event that the break–loose signal exceeds the programmed time limit, a latch is set, generating an interrupt signal applied to the computer control which immediately removes all motive power from the system and tests the latch to determine the source of the error, the latch remaining in the set state awaiting the computer test and being reset only after recognition by the computer.

Specifically, the Pollack ‘593 reference discloses a technique for preventing a stalled linear mortar device from damage including monitoring the accelerometer servos which

generate signals representative of the difference between a command acceleration signal controlling the linear mortar and the actual acceleration experienced by linear motor device which signal represents the acceleration error and the direction of the error. This is done for detecting the decoupling of a carriage from the air motor, but not for detecting collision.

The Pollack '593 reference does not anticipate nor suggest the present invention as claimed as method in the new claim 21 or claimed as a machine in the new claim 30. Specifically, as the Patent Office postulates, the Pollack '593 reference fails to elaborate on the nature of the detectors. It is Applicant's position that the Pollack '593 reference does elaborate the nature of the detectors--accelerometers located in the robot arm to measure the actual acceleration and compare the same to the expected acceleration (column 2, lines 51 to 62). However, measurement of acceleration or deceleration is quite different from the measurement of the physical material strains as claimed in claims 21 and 30. The measurement of the physical attributes as opposed to the time-related attributes (disclosed in the Pollack '593 reference) is disclosed in the specification of the present Application (last paragraph of page 3). Therefore, the Pollack '593 reference does not disclose all of the combination of features of the present invention and therefore can not anticipate the present invention.

Furthermore, another important difference as mentioned above is that the system as disclosed in the Pollack '593 reference is for detecting the decoupling of a carriage from the air motor, but not for detecting collision. Particularly, a collision may be possible, which will not decouple the carriage from the linear motor and accordingly, would not be detected by the technique and the device according to the Pollack '593 reference. These two differences are

very important to the present invention as claimed. The present invention as claimed has the capability to measure physical material strain of a material elasticity and prevent further damage, whereas a time-related accelerometer would only report the decoupling of a carriage after the fact.

Therefore, the Pollack '593 reference does not anticipate and does not suggest the present invention as claimed because the Pollack '593 reference fails to disclose a device which can detect collision and prevent such occurrence.

Claim Rejections – 35 USC §103

Claims 2 to 4, 6, 8, 12 to 14, and 16 to 20 have been rejected under 35 USC §103 (a) as being unpatentable over the Pollack '593 reference in view of the U.S. Pat. No. 5,440,935 to Petersen (the "Petersen '935" reference, hereinafter).

The Petersen '935 reference discloses a sensing apparatus for sensing at least two physical quantities as disclosed including a first transducer that provides a first output signal proportional to a first measured quantity represented and a second transducer that provides a second output signal proportional to a second measured quantity. An excitation regulator device is connected to the first transducer and the second transducer. The excitation regulator device provides an excitation signal to the second transducer so that the second transducer output signal is referenced to the first transducer output signal in order to obtain a resultant output signal which is a combination of the first and second output signals.

In other words, the Petersen '935 reference discloses a sensing apparatus for sensing

at least two physical quantities, as forces and accelerations, in order to conduct stress tests at probes, to which forces are exerted.

Applicant has reviewed the Petersen '935 reference and notes that nowhere in the Petersen '935 reference does it suggest a machine or a method to detect a collision. In fact, the Petersen '935 reference deals with verifying a first transducer with a second transducer. The Petersen '935 reference simply does not suggest the present invention or suggest that a person skilled in the art should combine the Petersen '935 reference with the Pollack '593 reference.

Claims 5 and 15 have been rejected under 35 USC §103 (a) as being unpatentable over the Pollack '593 reference in view of the Petersen '935 reference.

As stated above, the Petersen '935 reference simply does not suggest or provide motivation of the present invention as claimed, which would lead a person of ordinary skill in the art to believe that such transducer verification would be useful to a system for preventing collisions.

There must be some suggestion or teaching in the prior art as a whole which would lead the person of ordinary skill in the art to provide the combination as claimed. As the prior art as a whole fails to direct the person of ordinary skill in the art toward the claimed combination, the invention should be considered not anticipated, non-obvious and thus patentable.

Applicant also wishes to particularly point out the present invention against the U.S. Patent No. 4,791,588 to Onda. The Onda' 588 reference discloses a movable apparatus drive system with a driving device for the movable apparatus, a first output device for detecting environmental information around the movable apparatus and for outputting a corresponding

signal in response to the environmental information data, a second output device for outputting a command signal to drive the driving device so as to move the movable apparatus to a target position based on target position data of the movable apparatus to be moved and the current position data of the movable apparatus; and a supplied device for supplying a composite signal constituted by the environmental information data and the command signal.

Moreover, the Onda '588 reference discloses a robot with control system comprising a controlled device for controlling the motion of a robot in response to a command signal to the robot; a spring mechanism provided at a working point of the robot for detecting a deflection (displacement) caused by an external force applied to the robot; and a feedback means for feeding back a deflection feedback value obtained by multiplying detected output of the spring mechanism by a predetermined gain. The controlled device controls the motion of the robot in response to the addition of a position command generated from the controlled means and the deflection feedback value.

In other words, the Onda '588 reference discloses a position control for a robot. A positioning of a gripper is provided in that additionally to a position movement the position control is determined by a force feedback. In order to achieve this, the gripper has string elastic parts at which strain gauges are arranged, which provide input values for the position control.

Accordingly, in the material strains of the spring elastic parts of the gripper will only be measured in case of a collision. Material strains during the movement of the robot (without collision) are not detected. Furthermore, there is no comparison of actual values with regard

to nominal values.

In case of a collision, security measures are started, the position control is rather merely continued.

One object of the present invention is to provide an improvement which is not anticipated nor suggested by the method and at the device according to the Onda '588 reference. This object is met by the new claims 21 and 30.

The new claims 21 and 30 are not anticipated nor made obvious by the Onda '588 reference. The Onda '588 reference particularly does not show the features of comparing actual values with nominal or must values in order to determine an unexpected event.

Accordingly, the subject matter of the combination of features provided in the independent claims 21 and 30 are not anticipated nor made obvious by the Onda '588 reference.

In conclusion, none of the references cited in the office action provide all features of the new claims 21 and 30. Since the dependent claims also include all features of the independent claims, none of the references anticipate or suggest the present invention as claimed in the dependent claims as well.


As the prior art fails to suggest the combination of features as claimed, Applicant respectfully requests that the Examiner reconsider the rejection in view of the new claims and in view of the discussion above. Applicant respectfully solicits allowance of this application.


It is applicant's position that all claims are now allowable. Should the Examiner determine that issues remain that have not been resolved by this response, the Examiner is

requested to contact Applicant's representative at the number listed below.

Favorable action is requested.

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for Applicant,

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